Energy Policy Act of 2005, Section 1234
Economic Dispatch Study

FRCC Response to DOE Questions: 9/21/05

DOE Request

Section 1234 of the Energy Policy Act defines economic dispatch as "the operation of generation facilities to produce energy at the lowest cost to reliably serve customers, recognizing any operational limits of generation and transmission facilities." With that definition in mind, please answer as many of the following questions as you wish, attaching supporting materials such as studies or testimony that was filed in state or federal regulatory proceedings to support your answer.

Please send your response by e-mail to Economic.Dispatch@hq.doe.gov **no later than September 21, 2005**. Be sure to include the name and phone number of an individual who can answer any questions that may arise about your comments. Thanks in advance for your assistance with this study.

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Questions

1) What are the procedures now used in your region for economic dispatch? Who is performing the dispatch (a utility, an ISO or RTO, or other) and over how large an area (geographic scope, MW load, MW generation resources, number of retail customers within the dispatch area)?

The Florida Reliability Coordinating Council (FRCC) region consists of a geographic area which includes peninsular Florida, east of the Apalachicola River. The FRCC regional organization is a "reliability" focused coordination group and does not procedurally address the economic dispatch of individual generating facilities within the FRCC region nor does the FRCC address economic coordination among the FRCC member utilities.

Economic dispatch in the FRCC is performed by eleven Balancing Authorities, ((BAs) formerly referred to as control areas) through their own economic dispatch energy management system. This optimizes production costs for the balancing authority resources that are supplemented with wholesale "market" sales and purchases through bilateral transaction activity, which includes both utility and non-utility generation. One balancing authority in the region also acts as a "power pool" for its members.

The summer 2005, total generation resources for the region were equal to approximately 50,000 MW , while actual summer 2005 peak demand for the region was equal to approximately 45,000 MW. There are approximately 8.5 million retail customers within the FRCC region. Approximately 75% of the FRCC load is served by the three largest BAs. The remaining 25% of the load served consists of smaller contiguous BAs along with non-contiguous BAs made up of aggregated municipal and cooperative loads.

2) Is the Act's definition of economic dispatch (see above) appropriate? Over what geographic scale or area should economic dispatch be practiced? Besides cost and reliability, are there any other factors or considerations that should be considered in economic dispatch, and why?

The Act's definition of economic dispatch is appropriate, but the term itself "economic dispatch" in utility operations refers to real-time or hourly dispatch. Balancing Authorities also operate generation economically over longer terms to minimize unit commitment start-up and other costs. The proposed DOE definition captures short and longer-term economic operation of generation. This is only a point of clarification. We don't propose a change in the term because too many people use the term globally to take into account both the short and longer timeframes.

Balancing Authorities typically utilize a unit commitment (day-ahead, week ahead) program to schedule the generation resources, including power purchases that will be needed to meet the daily load obligation. The unit commitment program models operating characteristics of each purchase and plant. (Included in the modeling of each plant are the heat rates, fuel costs, start-up costs, minimum run times, emission limits and costs, etc.) The model then produces a schedule for dispatching the plants and purchases that minimize total operating costs over the period being considered. An economic dispatch energy management system uses incremental heat rates, incremental fuel prices and emission costs to dispatch all available on line generating resources in real time and power purchases to achieve the lowest possible production cost.

By recognizing operational limits of generation and transmission facilities, economic dispatch should be, and is typically practiced over any geographic scale or area that is electrically interconnected.

Costs and reliability are the primary considerations for economic dispatch; however "economic dispatch" must also consider losses, environmental constraints, fuel inventory or delivery constraints, purchase and sales opportunities, low load stability risk, ramp requirements, weather conditions (such as approaching hurricanes or tornado threats) and conditions at a plant that might increase the risk of a unit trip (such as a recent return from a major

overhaul or a boiler tube leak). These and other factors must be accounted for by the System Operator and can affect the economic dispatch.

3) How do economic dispatch procedures differ for different classes of generation, including utility-owned versus non-utility generation? Do actual operational practices differ from the formal procedures required under tariff or federal or state rules, or from the economic dispatch definition above? If there is a difference, please indicate what the difference is, how often this occurs, and its impacts upon non-utility generation and upon retail electricity users. If you have specific analyses or studies that document your position, please provide them.

There are no basic differences in economic dispatch procedures for different classes of generation for either utility or non-utility owned generation with the exception of PURPA required "must purchase" generation. These PURPA units are included in the economic dispatch in accordance with their PURPA requirements and contract conditions rather than on economic merit order. With some limited exceptions, utilities are obligated to purchase all of the energy delivered by these units rather than according to economic dispatch. These administratively developed costs often differ significantly from the real time energy costs used in the economic dispatch of other generation. With the exception of these PURPA generators, all utility owned generators and other non-utility purchases are dispatched to minimize the total system production cost.

Some Non-Utility Generators within the FRCC typically dispatch as fixed schedules from day-ahead commitment. Additionally, hourly purchases and sales are also developed and included. To the extent that non-utility generators choose to participate in the hourly or daily market, the generators will typically be economically dispatched based on the surrounding, regionally available resources.

4) What changes in economic dispatch procedures would lead to more non-utility generator dispatch? If you think that changes are needed to current economic dispatch procedures in your area to better enable economic dispatch participation by non-utility generators, please explain the changes you recommend.

No changes in current economic dispatch procedures are needed. All generation resources, including purchase and sales opportunities of non-utility generation, are continually evaluated for potential savings in order to minimize the total system production cost.

5) If economic dispatch causes greater dispatch and use of non-utility generation, what effects might this have – on the grid, on the mix of energy and capacity available to retail customers, to energy prices and costs, to environmental emissions, or other impacts? How would this affect retail customers in particular states or nationwide? If you have specific analyses to support your position, please provide them to us.

Since economic dispatch already includes use of non-utility generation, no changes or effects should be expected. Again, in the FRCC maximizing the use of existing resources and infrastructure already drives the Balancing Authorities to serve their native load demands with the lowest incremental cost generation available, while operating within the constraints of reliability and environmental regulations.

6) Could there be any implications for grid reliability – positive or negative – from greater use of economic dispatch? If so, how should economic dispatch be modified or enhanced to protect reliability?

Balancing authorities take into account grid reliability implications in their economic unit commitment and dispatch programs. Reliability and other constraints are incorporated into the dispatch. If reliability or any other constraints are violated, the economic dispatch is modified such that all constraints are satisfied at the minimum increase in cost. This modified economic dispatch process is typically referred to as “constrained economic dispatch” or “security constrained economic dispatch” (SCED).

Regarding reliability implications of greater economic dispatch, the reliability impacts would be a result of the design of the market. Greater use of economic dispatch can be accommodated and reliability can be protected provided that any changes to economic dispatch adhere to NERC and FRCC reliability standards and that other operational constraints, such as discussed in the response to question 2, are properly incorporated into the final dispatch.